# Intel Express 130T Standalone Hub

*User Guide*

**Year 2000 Capable**

An Intel product, when used in accordance with its associated documentation, is "Year 2000 Capable" when, upon installation, it accurately stores, displays, processes, provides, and/or receives date data from, into, and between the twentieth and twenty-first centuries, including leap year calculations, provided that all other technology used in combination with said product properly exchanges date data with it.

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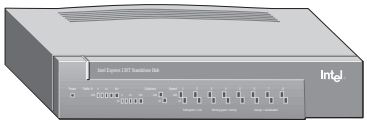
# Quick Start

## 1 Install the hub

Place the hub on a shelf or table, then plug the power supply into the hub and into a power outlet. Use only the power supply provided with the unit. Leave at least 3 inches (7.62 cm) clearance around the sides of the hub.



Leave at least 3 inches (7.62 cm) clearance on sides.

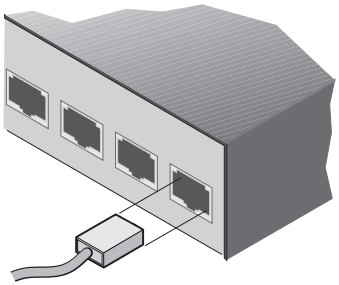
## 2 Connect devices to the hub

Plug each cable into an RJ-45 port at the rear of the hub.

- Use Category 5 unshielded twisted pair (UTP) cabling to connect 100Base-TX devices to the hub.
- Use Category 3, 4, or 5 UTP cabling to connect 10Base-T devices to the hub.
- Make sure cable length doesn't exceed 100 meters (328 feet).

Each port automatically detects and matches the speed of the attached device (10Mbps or 100Mbps).

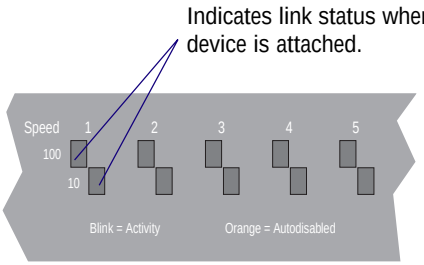
All ports communicate with each other, regardless of speed.



Plug network cables into the ports at the rear of the hub. Each port automatically matches the speed of the attached device.

## 3 Check for links

Each port at the rear of the hub has a corresponding LED on the front of the hub. Make sure the LED of each port you're using shows a green link light at either 10 or 100Mbps.



# Frequently asked questions

**Does each port operate at 10Mbps or 100Mbps?**

Yes. Each port on the Express 130T Standalone Hub is capable of 10Mbps or 100Mbps half-duplex operation.

**Do I have to set a port's speed?**

No. Ports on the Express 130T Standalone Hub automatically detect and match the speed of an attached device.

**Do ports operating at different speeds communicate with each other?**

Yes. The Express 130T Standalone Hub's internal bridge allows all ports to communicate with each other, regardless of operating speed.

**Can I connect the Express 130T Standalone hub to another hub?**

Yes. For connection guidelines, see "Connecting to Hubs and Switches" on page 6.

**Can I configure the Express 130T Standalone Hub for full-duplex operation?**

No. Hubs do not support full-duplex operation.

**Can I wall mount the Express 130T Standalone Hub?**

Yes. Using the two wall mount hole guides on this page, mark and drill into the wall where you want to mount the hub. Then insert the provided screws into the wall and hang the hub.

6.00" (15.24 cm.)

Wall mount hole guides

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# Overview

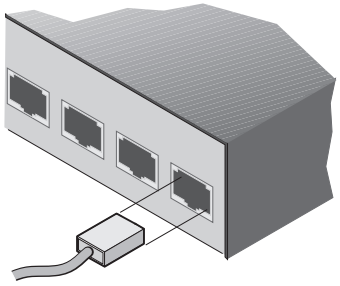
The Intel Express 130T Standalone Hub is an 8-port hub that operates at 10 or 100Mbps.

- All ports on the hub are capable of 10 or 100Mbps half-duplex operation.
- Each port on the hub automatically detects the highest possible speed of an attached device (either 10Mbps or 100Mbps) and matches that speed.
- The Express 130T Standalone Hub's internal bridge allows all ports to communicate with each other, regardless of operating speed.
- The Intel Express 130T Standalone Hub monitors port status, network traffic, and collisions at both 10 and 100Mbps.

This User Guide describes how to install, connect, and troubleshoot the hub.

# Connection Guidelines

You can connect the Intel Express 130T Standalone Hub to various PCs, switches, routers, servers, and print servers running at either 10Mbps or 100Mbps. Each port on the Express 130T Standalone Hub automatically matches the highest possible speed of an attached device.



**Note** For guidelines on connecting to another hub, see "Connecting to Hubs and Switches" on page 6.

## Connecting to 100Base-TX devices

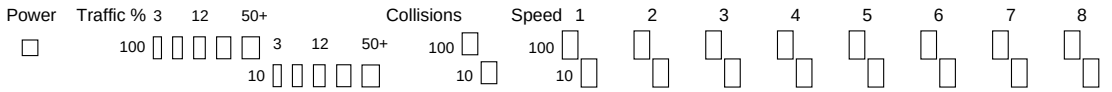
- Use Category 5 unshielded twisted pair (CAT 5 UTP) cable.
- Always limit the cable length between the hub and any connected PC, server, switch, or print server to 100 meters (328 feet). The IEEE specification requires this distance.
- See "Connecting to a 100Mbps hub" on page 6 for information on connecting to 100Mbps hubs.
- Use ports 1-8.

## Connecting to 10Base-T devices

- Use Category 3, 4, or 5 unshielded twisted pair (CAT 3, 4, or 5 UTP) cable.
- Always limit the cable length between the hub and any connected device to 100 meters (328 feet). The IEEE specification requires this distance.
- See "Connecting to an existing 10Mbps network" on page 7 for information on connecting the Express 130T Standalone Hub to a 10Mbps network segment.
- Use ports 1-8.

# LED Indicators

The LEDs on the front of the hub indicate the status of each port as well as the overall condition of the hub.




| LED | Color | Meaning |
|---|---|---|
| Power | Green | Hub is receiving power. |
| Traffic % | Green | Utilization is low to medium (3-12 percent). |
| | Orange | Utilization is medium to high (25-50+ percent). |
| Collisions | Green | Collisions detected. |
| | Off | No collisions detected. |
| | | Collisions are normal in an Ethernet environment. Continuous blinking indicates an overloaded network. |
| Speed | Green | Port has a link. |
| | Orange | Port has been autodisabled (partitioned). |
| | Blink | Activity detected on port. |
| | Off | No link. |
| | | Speed LEDs show the operating speed of a particular port—10Mbps or 100Mbps. |

# Autodisabled Ports

The Express 130T Standalone Hub automatically disables a port when it detects a serious error on that port, such as a series of more than 64 collisions on a single packet. Once the hub sees a valid packet from the device or is able to transmit a packet from the port, it automatically reenables the port. Connected devices aren't usually affected by an autodisabled port because the port is reenabled so quickly.

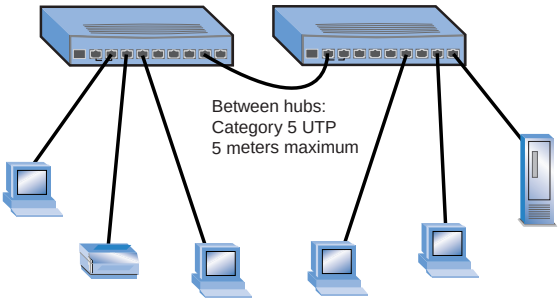
If a port remains autodisabled, check the connected device's network adapter and cabling, or unplug the network cable for a few seconds, then reattach it.

# Connecting to Hubs and Switches

## Connecting to another 130T hub

Using no more than 5 meters of CAT 5 UTP cable, connect the Daisy-chain port on one hub to any port **except** the Daisy-chain port on the other hub. Do not connect two Daisy-chain ports. If you do, the two connected hubs won't be able to communicate.

**Note** Remember, if you use the Daisy-chain port, you can't simultaneously use Port 1 on the same hub.




You can connect no more than two Express 130T Standalone Hubs.

Always limit the cable length between the hub and any connected PC, server, switch, or print server to 100 meters (328 feet). The IEEE specification requires this distance.

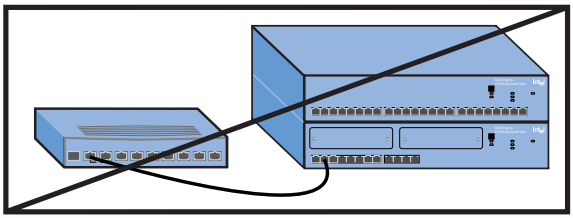
## Connecting to a 100Mbps hub

If you want to connect the Express 130T Hub to a 100Base-TX hub that supports daisy-chaining, such as the Intel Express Standalone Hub, follow the procedure for connecting two 130T hubs.

You can connect the Express 130T Standalone Hub to a 100Mbps hub that supports daisy-chaining.

Do not connect the Express 130T Standalone Hub to a 100Base-T Class I hub, such as the Express 10/100 Stackable Hub.

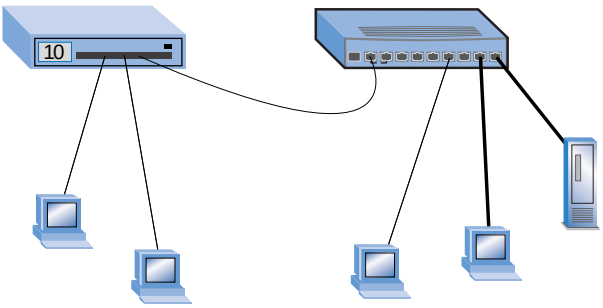
Don't connect the Express 130T Standalone Hub to a 100Base-T Class I hub.



## Connecting to an existing 10Mbps segment

Using no more than 100 meters of CAT 3, 4, or 5 UTP cable, connect the Daisy-chain port on the Express 130T Standalone Hub to an MDI-X port on the 10Mbps hub or switch.

The Express 130T Standalone Hub's internal bridge allows devices connected to the hub to communicate with devices on the 10Mbps segment.



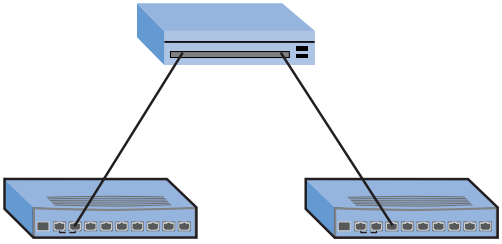

10Mbps connections
Category 3, 4, or 5 UTP, 100 meters maximum

100Mbps connections
Category 5 UTP, 100 meters maximum

# Connecting to a switch

Connecting hubs to a switch, such as the Intel Express 510T Switch, allows you to extend your network topology. The cable length between the Express 130T Standalone Hub and the switch must not exceed 100 meters.

If you’re connecting to a 10Mbps switch, make sure you use no more than 100 meters of CAT 3, 4, or 5 UTP. If you’re connecting to a 100Mbps switch, make sure you use no more than 100 meters of CAT 5 UTP.



# Troubleshooting

## Symptoms and solutions

Most problems with the Express 130T Standalone Hub are caused by incorrect cabling. If you have problems connecting devices, check your cabling first.

**A port LED is orange.**

This means the hub has autodisabled (partitioned) a port.

- Check the attached device's LAN adapter and cabling.
- See "Autodisabled Ports" on page 5.

**A port LED doesn't light after a cable is attached.**

This means the connected device has a defective network adapter, cable, or port.

- Test the cable (see "Testing a cable" on page 11).
- Make sure the correct cable type (straight-through or crossover) is being used. See "Straight-through vs. crossover cables" on page 10.
- Check the LAN adapter.
- Try another port on the hub.

**A 10/100 LAN adapter connects at 10Mbps but not at 100Mbps.**

- Check to see if the LAN adapter's speed is forced to 10Mbps.
- Make sure you're using CAT 5 cable to connect the LAN adapter to the hub.

**After you've forced a network adapter to 100Mbps from 10Mbps, you're unable to connect to the network.**

- Unplug the network cable for a few seconds, then reconnect.

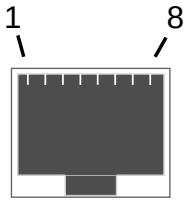
## Tips

- Make sure cable length between the hub and attached PCs, servers, switches, and print servers, doesn't exceed 100 meters. The IEEE specification requires this distance.
- If you're connecting two Express 130T Standalone Hubs or a 130T Standalone hub and a 100Base-TX hub that supports daisy-chaining, make sure the cable length between hubs doesn't exceed 5 meters.

# Cabling Requirements

## Straight-through vs. crossover cables

Ports 1-8 on the Express 130T Standalone Hub are wired MDI-X (indicated by the ‘x’ next to the port number), which allows you to use a straight-through cable when connecting to a PC or server (network adapter cards are wired MDI). For direct connection to another MDI-X port (such as a switch port), use a crossover cable.




| Straight-through Cable | | |
|---|---|---|
| **Hub** | | **Adapter** |
| 1 RX + | — | 1 TX + |
| 2 RX - | — | 2 TX - |
| 3 TX + | — | 3 RX + |
| 6 TX - | — | 6 RX - |

| Crossover Cable | | |
|---|---|---|
| **Hub** | | **Switch** |
| 1 RX + | ✕ | 1 RX+ |
| 2 RX - | ✕ | 2 RX - |
| 3 TX + | ✕ | 3 TX + |
| 6 TX - | ✕ | 6 TX - |

**Note** Wires 1 & 2 and 3 & 6 must be twisted pairs.

## Determining which cable to use

The following guidelines are based on the Express 130T Standalone Hub, the Intel Express 510T Switch, Intel EtherExpress™ LAN Adapters, (server or PC), and Intel NetportExpress™ print servers.

| For this connection | Use this cable |
|---|---|
| Hub to switch | Crossover* |
| Hub to server or PC | Straight-through |
| Hub to print server | Straight-through |

* Instead of using a crossover cable from ports 1-8, you can use a straight-through cable from the Daisy-chain port. Remember, you can’t use Port 1 if you’re using the Daisy-chain port.

# Testing a cable

Here’s an easy way to test the link integrity of a cable:

**1** Plug one end of the cable into the Daisy-chain port.

**2** Plug the other end of the cable into port 2X.

**3** Check port 1 and port 2 Speed LEDs on the front of the unit.

If these ports are lit, you have a functioning **straight-through** cable.

If the ports are unlit, remove the cable from the Daisy-chain port and reinsert it in port 1X. If the Speed LEDs for ports 1 and 2 are on, you have a functioning **crossover cable**.

If the LEDs are unlit, you have a bad cable.

If a cable passes either of these tests, but the network connection is slow, verify that wires 1 & 2 and 3 & 6 on the cable are twisted pairs.

## Limited Hardware Warranty

Intel warrants to the original owner that the hardware product delivered in this package will be free from defects in material and workmanship for three (3) years following the latter of: (i) the date of purchase only if you register by returning the registration card as indicated thereon with proof of purchase; or (ii) the date of manufacture; or (iii) the registration date if by electronic means provided such registration occurs within thirty (30) days from purchase. This warranty does not cover the product if it is damaged in the process of being installed. Intel recommends that you have the company from whom you purchased this product install the product.

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This warranty does not cover replacement of products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation or improper testing. If the product is found to be otherwise defective, Intel, at its option, will replace or repair the product at no charge except as set forth below, provided that you deliver the product along with a return material authorization (RMA) number either to the company from whom you purchased it or to Intel (North America only). If you ship the product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge. Intel may replace or repair the product with either new or remanufactured product or parts, and the returned product becomes Intel's property. Intel warrants the repaired or replaced product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the return shipping date; or (ii) the period of time remaining on the original three (3) year warranty.

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Before returning any product, contact an Intel Customer Support Group and obtain an RMA number by calling:

| | |
|---|---|
| North America only: | (916) 377-7000 |
| Other locations: | Return the product to the place of purchase. |

If the Customer Support Group verifies that the product is defective, they will have the Return Material Authorization Department issue you an RMA number to place on the outer package of the product. Intel cannot accept any product without an RMA number on the package.

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This warranty does not cover replacement of products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation or improper testing. If the product is found to be otherwise defective, Intel, at its option, will replace or repair the product at no charge except as set forth below, provided that you deliver the product along with a return material authorization (RMA) number either to (a) the company from whom you purchased it or (b) to Intel, North America only (if purchased in Europe you must deliver the product to "(a)". If you ship the product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge. Intel may replace or repair the product with either new or remanufactured product or parts, and the returned product becomes Intel's property. Intel warrants the repaired or replaced product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the return shipping date; or (ii) the period of time remaining on the original three (3) year warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this product are covered by Intel's limited warranty for this product; the product may contain fully tested, recycled parts, warranted as if new. For warranty information call one of the numbers below.

**Returning a Defective Product (RMA)**
Before returning any product, contact an Intel Customer Support Group and obtain an RMA number by calling:

| Country | Number | Language |
|---|---|---|
| France | +44 1793 404988 | French |
| Germany | +44 1793 404777 | German |
| Italy | +44 1793 404141 | Italian |
| UK | +44 1793 404900 | English |

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Software provided with the hardware product is not covered under the hardware warranty described above. See the applicable software license agreement which shipped with the hardware product for details on any software warranty.

This limited hardware warranty shall be governed by and construed in accordance with the laws of England and Wales. The courts of England shall have exclusive jurisdiction regarding any claim brought under this warranty.

# Regulatory information

## Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

## Manufacturer Declaration

This certifies that the Intel Express 130T Standalone Hub complies with the EU Directive 89/336/EEC, using the EMC standards EN55022 (Class A) and EN50082-1. This product also meets or exceeds EN 60950 (safety) requirements. This product has been tested and verified to meet CISPR 22 Class A requirements.

## WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## WARNING

The system is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust).
- Well ventilated and away from sources of heat including direct sunlight.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.

Do not attempt to modify or use the supplied AC power cord if it is not the exact type required.

Ensure that the system is disconnected from its power source and from all telecommunications links, networks, or modems lines whenever the chassis cover is to be removed. Do not operate the system with the cover removed.

## AVERTISSEMENT

Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

- Propre et dépourvu de poussière en suspension (sauf la poussière normale).
- Bien aéré et loin des sources de chaleur, y compris du soleil direct.
- A l'abri des chocs et des sources de ibrations.
- Isolé de forts champs magnétiques géenérés par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques il est recomandé de brancher votre système à un supresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage.
- Muni d'une prise murale correctement mise à la terre.

Ne pas utiliser ni modifier le câble d'alimentation C. A. fourni, s'il ne correspond pas exactement au type requis.

Assurez vous que le système soit débranché de son alimentation ainsi que de toutes les liaisons de télécomunication, des réseaux, et des lignes de modem avant d'enlever le capot. Ne pas utiliser le système quand le capot est enlevé.

## WARNUNG

Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der entwickelt. Der Standort sollte:

- sauber und staubfrei sein (Hausstaub ausgenommen);
- gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);
- keinen Erschütterungen ausgesetzt sein;
- keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;
- in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen;
- mit einer geerdeten Wechselstromsteckdose ausgerüstet sein.

Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht um genau den erforderlichen Typ handelt.

Das System darf weder an eine Stromquelle angeschlossen sein noch eine Verbindung mit einer Telekommunikationseinrichtung, einem Netzwerk oder einer Modem-Leitung haben, wenn die Gehäuseabdeckung entfernt wird. Nehmen Sie das System nicht ohne die Abdeckung in Betrieb.

## AVVERTENZA

Il sistema è progettato per funzionare in un ambiente di lavoro tipico. Scegliere una postazione che sia:

- Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente).
- Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta.
- Al riparo da urti e lontana da fonti divibrazione.
- Isolata dai forti campi magnetici prodotti da dispositivi elettrici.
- In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente. In caso di temporali, scollegare le linee di comunicazione dal modem.
- Dotata di una presa a muro correttamente installata.

Non modificare o utilizzare il cavo di alimentazione in c. a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto.

Prima di rimuovere il coperchio del telaio, assicurarsi che il sistema sia scollegato dall'alimentazione, da tutti i collegamenti di comunicazione, reti o linee di modem. Non avviare il sistema senza aver prima messo a posto il coperchio.

## ADVERTENCIAS

El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

- Limpio y libre de partículas en suspensión (salvo el polvo normal)
- Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa.
- Alejado de fuentes de vibración.
- Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos.
- En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltage y desconectar el módem de las líneas de telecomunicación durante las tormentas.
- Previsto de una toma de tierra correctamente instalada.

No intente modificar ni usar el cable de alimentación de corriente alterna, si no se corresponde exactamente con el tipo requerido.

Asegúrese de que cada vez que se quite la cubierta del chasis, el sistema haya sido desconectado de la red de alimentación y de todos lo enlaces de telecomunicaciones, de red y de líneas de módem. No ponga en funcionamiento el sistema mientras la cubierta esté quitada.

# Intel Automated Customer Support

You can reach Intel's automated support services 24 hours a day, every day at no charge. The services contain the most up-to-date information about Intel products. You can access installation instructions, troubleshooting information, and general product information.

| | **World Wide Web & Internet FTP**<br>Access Intel's World Wide Web home page or download information using anonymous FTP. | **Intel BBS**<br>Use Intel's Bulletin Board. Dial in by modem at 8-N-1, and up to 14.4 Kbps. |
|---|---|---|
| **Troubleshooting** | ✓ | |
| **Software updates** | ✓ | ✓ |
| **Installation notes** | ✓ | |
| **Product information** | ✓ | |
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